REMARKS

35 U.S.C. § 103 Rejections

The Office Action rejects claims 1-7, 9-13, 15-23, and 25-34 under U.S.C. 103(a) as being unpatentable over US Patent 7,024,006 (Schwartz) and further in view of US Patent 6,696,633 (Miyagishima). Applicant has amended the claims to distinguish over the prior references.

Amended claim 1 recites a parametric equalizer comprising an audio filter having a plurality of electronic components for filtering a first audio signal, and a first control mechanism having a variable resistive element coupled to a first node within the plurality of electronic components for controlling a center frequency of the audio filter for modifying a center frequency of the first audio signal. The equalizer includes a second control mechanism consisting of a rotary control knob mechanically coupled to wiper arms of first and second commonly controlled variable resistive elements. The first and second commonly controlled variable resistive elements are respectively coupled to second and third nodes within the plurality of electronic components. The first and second commonly controlled variable resistive elements jointly control a signal level and a bandwidth of the audio filter for simultaneously modifying a signal level and a bandwidth of the first audio signal. The rotary control knob is configured to rotate in a first direction to move the wiper arms of the first and second commonly controlled variable resistive elements in corresponding first directions to simultaneously increase the signal level and increase the bandwidth of the first audio signal and the rotary control knob is configured to rotate in a second direction to

move the wiper arms of the first and second commonly controlled variable resistive elements in corresponding second directions to simultaneously decrease the signal level and decrease the bandwidth of the first audio signal.

None of the references teach or suggest a second control mechanism consisting of a rotary control knob mechanically coupled to wiper arms of first and second commonly controlled variable resistive elements. The first and second commonly controlled variable resistive elements jointly control a signal level and a bandwidth of the audio filter for simultaneously modifying a signal level and a bandwidth of the first audio signal.

In the Schwartz reference, each mechanical input knob is only configured to modify a single attribute of the input signals. For example, with reference to FIG. 2A of the reference, the equalizer includes three separate inputs. The first input controls the central frequency of the first and second input signals. The second input controls the bandwidth of the first and second input signals. The third input controls the gain of the first and second input levels. At no time in the reference does any single mechanical input couple to more than one commonly controlled variable resistive element to control a signal level and a bandwidth of the first audio signal as required by the present claim.

The Miyagishima reference never discloses a mechanical input and provides no external mechanism for a user to control any of the characteristics of a parameteric equalizer. Instead, the Miyagishima reference includes a computer-controlled equalizer. The equalizer is settable, and the computer monitors an output sound and automatically modifies the signal level,

gain and bandwidth of the equalizer via an electrical network - no input is provided by the user. To control the equalizer, the computer of the Miyagishima system "outputs setting instructions indicative of a particular center frequency, gain and selectivity Q such that the programmable equalizer 208 can be set to the determined characteristic PAL." See column 15, lines 52-55. Accordingly, the Miyagishima reference never discloses the second control mechanism consisting of a rotary control knob mechanically coupled to wiper arms of first and second commonly controlled variable resistive elements of the present claim.

None of the references teach or suggest wherein the rotary control knob is configured to rotate in a first direction to move the wiper arms of the first and second commonly controlled variable resistive elements in corresponding first directions to simultaneously increase the signal level and increase the bandwidth of the first audio signal and the rotary control knob being configured to rotate in a second direction to move the wiper arms of the first and second commonly controlled variable resistive elements in corresponding second directions to simultaneously decrease the signal level and decrease the bandwidth of the first audio signal. None of the references discuss such a relationship between the signal level and bandwidth of the audio signal, or provide for a single mechanical input for selecting and controlling their respective levels within the filter.

Therefore, claim 1, as amended, is believed to patentably distinguish over the Schwartz reference. Claims 2-6 are believed to be in condition for allowance as each is dependent from an allowable base claim.

Amended claim 7 recites an audio system comprising a

parametric equalizer having attributes determined by a plurality of control parameters. The parametric equalizer includes an audio filter having a plurality of electronic components. The system includes a first control interface coupled for jointly controlling first and second control parameters of the parametric equalizer. The first control interface includes a mechanical input. The mechanical input consists of one rotary control knob or one linear slide control coupled to the audio filter. The first control parameter is signal level of the audio filter and the second control parameter is bandwidth of the audio filter. The mechanical input is configured to move in a first direction to simultaneously increase the signal level and increase the bandwidth of the parametric equalizer and the mechanical input is configured to move in a second direction to simultaneously decrease the signal level and decrease the bandwidth of the parametric equalizer.

None of the references teach or suggest a mechanical input that is configured to move in a first direction to simultaneously increase the signal level and increase the bandwidth of the parametric equalizer and wherein the mechanical input is configured to move in a second direction to simultaneously decrease the signal level and decrease the bandwidth of the parametric equalizer. None of the references discuss such a relationship between the signal level and bandwidth of the audio signal, or provide for a single mechanical input for selecting and controlling their respective levels within the filter.

Therefore, claim 7, as amended, is believed to patentably distinguish over the Schwartz reference. Claims 9-13 and 15-21

are believed to be in condition for allowance as each is dependent from an allowable base claim.

Amended claim 22 recites a signal processing circuit comprising a filter, and a first variable resistor coupled to a first node within the filter for controlling a first parametric function of the filter. The first variable resistor includes a first wiper arm. The circuit includes a second variable resistor coupled to a second node within the filter for controlling a second parametric function of the filter. The second variable resistor includes a second wiper arm. The first and second wiper arms of the first and second variable resistors are jointly controlled by a single mechanical input to the signal processing circuit. The first parametric function is signal level and the second parametric function is bandwidth.

None of the references teach or suggest a single mechanical input for controlling first and second parametric functions of a signal processing circuit. The first parametric function is signal level and the second parametric function is bandwidth.

In the Schwartz reference, each mechanical input knob is only configured to modify a single attribute of the input signals. For example, with reference to FIG. 2A of the reference, the equalizer includes three separate inputs. The first input controls the central frequency of the first and second input signals. The second input controls the bandwidth of the first and second input signals. The third input controls the gain of the first and second input levels. At no time in the reference does any single mechanical input couple for controlling first and second parametric functions of a signal processing circuit as required by the present claim.

The Miyagishima reference never discloses a mechanical input and provides no external mechanism for a user to control any of the characteristics of a parameteric equalizer. Instead, the Miyagishima reference includes a computer-controlled equalizer. The equalizer is settable, and the computer monitors an output sound and automatically modifies the signal level, gain and bandwidth of the equalizer via an electrical network - no input is provided by the user. To control the equalizer, the computer of the Miyagishima system "outputs setting instructions indicative of a particular center frequency, gain and selectivity Q such that the programmable equalizer 208 can be set to the determined characteristic PAL." See column 15, lines 52-55. Accordingly, the Miyagishima reference never discloses the single mechanical input of the present claim. Instead, as described by the reference, the computer system automatically issues multiple encoded instruction commands to set the various output characteristics of the parametric filter with no user intervention.

Therefore, claim 22, as amended, is believed to patentably distinguish over the Schwartz reference. Claim 23 is believed to be in condition for allowance as it is dependent from an allowable base claim.

Amended claim 25 recites a method of controlling a parametric equalizer comprising providing a mechanical input for generating an input value, and providing a control interface coupled to the mechanical input and having first and second variable elements which are jointly controlled. The method includes controlling a first and second control parameter of the parametric equalizer with the first and second variable elements in accordance with the input value of the mechanical input by

moving the mechanical input in a first direction to simultaneously increase the first and second control parameters of the parametric equalizer or moving the mechanical input in a second direction to simultaneously decrease the first and second control parameters.

None of the references teach or suggest controlling a first and second control parameter of the parametric equalizer with the first and second variable elements in accordance with the input value of the mechanical input by moving the mechanical input in a first direction to simultaneously increase the first and second control parameters of the parametric equalizer or moving the mechanical input in a second direction to simultaneously decrease the first and second control parameters. None of the references discuss such a relationship between first and second control parameters within an equalizer, or provide for a single mechanical input for selecting and controlling their respective levels within the filter

Therefore, claim 25, as amended, is believed to patentably distinguish over the Schwartz reference. Claims 26-28 are believed to be in condition for allowance as each is dependent from an allowable base claim.

Amended claim 29 recites an audio system comprising an input port for receiving an input consisting of a single audio signal, and a bandwidth filter circuit coupled to the input port for receiving and filtering the audio signal. The bandwidth filter circuit is tunable in response to an input value. The system includes a signal level filter circuit coupled to the input port for receiving and filtering the audio signal. The signal level filter circuit is tunable in response to an input value. The system includes a mechanical input for generating an

input value and being configured to communicate the input value to the bandwidth filter circuit and the signal level filter circuit. The bandwidth filter circuit and the signal level filter circuit modify a bandwidth and a signal level of the audio signal in accordance with the input value.

None of the references teach or suggest a mechanical input for generating an input value and being configured to communicate the input value to the bandwidth filter circuit and the signal level filter circuit. The bandwidth filter circuit and the signal level filter circuit modify a bandwidth and a signal level of the audio signal in accordance with the input value.

In the Schwartz reference, each mechanical input knob is only configured to modify a single attribute of the input signals. For example, with reference to FIG. 2A of the reference, the equalizer includes three separate inputs. The first input controls the central frequency of the first and second input signals. The second input controls the bandwidth of the first and second input signals. The third input controls the gain of the first and second input levels. At no time in the reference does any single mechanical input couple to more than one commonly controlled variable resistive elements to control a signal level and a bandwidth of the first audio signal as required by the present claim.

The Miyagishima reference never discloses a mechanical input and provides no external mechanism for a user to control any of the characteristics of a parameteric equalizer. Instead, the Miyagishima reference includes a computer-controlled equalizer. The equalizer is settable, and the computer monitors an output sound and automatically modifies the signal level,

gain and bandwidth of the equalizer via an electrical network - no input is provided by the user. To control the equalizer, the computer of the Miyagishima system "outputs setting instructions indicative of a particular center frequency, gain and selectivity Q such that the programmable equalizer 208 can be set to the determined characteristic PAL." See column 15, lines 52-55. Accordingly, the Miyagishima reference never discloses the mechanical input for generating an input value and being configured to communicate the input value to the bandwidth filter circuit and the signal level filter circuit of the present claim.

Therefore, claim 29, as amended, is believed to patentably distinguish over the Schwartz reference. Claims 30-34 are believed to be in condition for allowance as each is dependent from an allowable base claim.

Conclusion

Applicant believes that all information and requirements for the application have been provided to the USPTO. If there are matters that can be discussed by telephone to further the prosecution of the Application, Applicant invites the Examiner to call the undersigned attorney at the Examiner's convenience.

The Commissioner is hereby authorized to charge any fees due with this Response to U.S. PTO Account No. 17-0055.

Respectfully submitted,
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December 4, 2008

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